Multiple, massive transfusions of whole blood, eradication of all local foci of infection present, laparotomy for removal of the spleen and other tissues showing evidence of chronic infection. Even though no ultimate cures may result, it seems that the work is worth while; that it offers at least the quickest and most certain method of obtaining a remission of the disease, even in some of the extreme and long standing cases.

THERAPEUTICS

UNDER THE CHARGE OF

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A Study of Ethylhydrocuprein (Optochin) in the Treatment of Acute Lobar Pneumonia.—Moore and Chesny (*Arch. Int. Med.*, 1917, xix, 611), in a comprehensive article, discuss the action of optochin as observed experimentally and also clinically. As judged from a series of 32 cases, when optochin hydrochloride was given by mouth to patients suffering from acute lobar pneumonia in such amounts that they received at least 0.024 gm. per kilogram of body weight per twenty-four hours, and when the size and spacing of the individual doses were adequately regulated, a specific pneumococcidal action appeared in their blood within a few hours, and could be maintained more or less constant for several days. In order to maintain the bactericidal action in the blood at a constant level, the intervals between the individual doses given by mouth should not ordinarily exceed about two and a half to three hours. When optochin is given by mouth according to such a scheme of dosage as outlined, the evidence points to some retention or accumulation in the blood of part of the drug absorbed. Administration of optochin hydrochloride by mouth appears to be more satisfactory than intramuscular administration. Further study of intramuscular administration appears to be desirable. Pneumococci not only *in vitro* but also in the human body in patients treated with optochin, may acquire the property of more or less complete resistance or "fastness" to the drug Toxic symptoms, such as tinnitus, deafness, amblyopia, or amaurosis (retinitis) may be observed in the use of the drug in man; they are generally transient. Retinitis, however, may result in more or less permanent impairment of vision.

The Effects of Salicylates on Experimental Arthritis in Rabbits.—Fantus, Simmons and Moore (*Arch. Int. Med.*, 1917, xix, 529) found that sodium salicylate, when used in a dose comparatively harmless to animal controls is decidedly detrimental and liable to be fatal to animals infected with the hemolytic streptococcus. The addition of sodium bicarbonate does not lessen much the harmfulness of the salicylate to infected rabbits. Sodium bicarbonate given alone is not injurious to infected rabbits, neither does it produce a noticeable improvement. Acetylsalicylic acid in equivalent dosage appears to be much more toxic to normal rabbits than is sodium salicylate, and is harmful to infected rabbits as well. Salophene has either no influence or an unfavorable one on the course of the infection. The results of the experiments reported point to the conclusion that in the experimentally induced arthritis of rabbits salicylates are not only worthless, but even harmful. To bring these results in harmony with the clinically established usefulness of salicylates in rheumatic fever in human beings, several possibilities must be considered: (1) The Streptococcus hemolyticus used in these experiments might not have been the strain of streptococcus that is particularly susceptible to salicylate. It is well known that not all cases of infectious polyarthritis respond to salicylate in a specific manner; (2) it might be that there is a chemical difference between the system of the rabbit and that of man in its relation to salicylate; for example, a difference in the hydrogen (ion) concentration of the tissue fluids; (3) the action of salicylate in human beings might be merely symptomatic, but not really curative.

The Treatment of Tuberculosis with Cyanocuprol.—OTANI (*New York Med. Jour.*, 1917, cv, 537) says that cyanocuprol has been shown to be effective in cases of tuberculosis of varying degrees of severity. Of 22 patients that seemed to be hopeless and had been treated with all known methods, 8 showed marked improvement. The size of the dose seems to be closely related to the symptoms and the reactions. During the first period, when larger doses were employed, less beneficial results were obtained than during the second period when the size of the dose was considerably decreased. Cyanocuprol is effective in cases with fever, malnutrition, induration, and catarrhal condition of the lesion. In pulmonary tuberculosis the dull area and rales usually decrease, the number of bacilli in the sputum is diminished. The author has not yet studied a sufficient number of other forms of tuberculosis to permit any conclusions to be drawn. Injections of cyanocuprol sometimes causes general or lesional reactions in the patients. Febrile reactions were observed in 14.6 per cent. and lesional reactions in 25.6 per cent., based on the number of injections. These reactions were slight and transient. More severe reactions were produced in only 6.4 per cent. of the cases. During the first period in which the author had only a limited experience in the use of the drug, 7 cases showed unfavorable results; but during the second period there were none. The present communication is an additional contribution on this same subject, and the author now reports a total of 118 cases of tuberculosis treated on this plan during the past year.

The Nutritional Value of the Banana.—MYERS and ROSE (*Jour. Am. Med. Assn.*, 1917, lxviii, 1022) say that bananas have a higher caloric value than any of our other common fruits. Unlike most other fruits, they are always in season. When fully ripe, that is, when the starch has been almost completely changed to sugar, the experiments here reported show that the carbohydrates of the banana are well absorbed from the intestine. As sold in the market, however, bananas are frequently not sufficiently ripe to be consumed to advantage immediately, and it would seem that gastro-intestinal disturbances when attributed to the banana were referable to this cause. It may be said, in general, regarding the experiments of the authors, that no ill effects, discomfort, or distaste were noted even after the consumption of large quantities of sugar (glucose, sucrose, levulose) may be given in the form of banana than as pure sugar (sucrose, glucose) without producing gastro-intestinal disturbances. The composition of the banana and the potato shows an interesting similarity both as regards total carbohydrate and the amounts of the different mineral constituents. While the banana can hardly be regarded as a potato substitute, the fact that it has practically the same caloric value as the potato is worthy of note. It is also of interest that both the banana and the potato yield an alkaline ash and are therefore antagonistic to the development of an acidosis. Of even greater importance is the fact that bananas may be eaten uncooked. This is of interest in view of the increasing significance that is being attached to the thermolabile "accessory food substances." The banana would appear to be a particularly valuable food to employ in the dietetic treatment of nephritic patients with nitrogen retention. Very satisfactory results have been obtained in the rather mild cases of nephritis here reported. As long as the patients exhibit no distaste for the fruit, there would seem to be no reason why bananas should not be employed in considerable quantity. The authors hope to report in the near future results obtained with this form of diet in cases of advanced nephritis.

Salvarsan and Neosalvarsan in Syphilis.—Ormsby (*Jour. Am. Med. Assn.*, 1917, lxviii, 949) is of the opinion that salvarsan and neosalvarsan are the most efficient drugs yet discovered in the treatment of syphilis. Alone they have completely eradicated the infection in early cases before the Wassermann reaction has become positive. The large number of reinfections testify to this fact. Yet even in these cases mercury is recommended as an adjunct. In all other cases, mercury should always be an accompaniment of salvarsan, and in many cases potassium iodide is indicated, especially in the so-called tertiary and latent cases and in those involving the nervous system. The ability of potassium iodide to remove infiltrations, gummas, and nodules, together with its marked effect on vascular implications, renders its use imperative. The major number of reactions following the use of salvarsan and neosalvarsan are insignificant. The more serious ones are to be avoided, so far as possible, by an initial small dose to test the tolerance of the patient, by careful attention to details in administrative technic, by recognizing contra-indications, and, in the case of early, active syphilis, preceding the salvarsan treatment with mercury, to prevent neurorecurrences; and finally by giving sufficient treatment to control the disease. The author lays emphasis on the latter statement, as much harm may be done by its apparent effect, the degree of relief placing the patient in a position of false security; therefore sufficient treatment is demanded to prevent recurrence and relapses. Many of the earlier cases, following insufficient treatment of rapid onset of symptoms which ordinarily come late in the disease, such as nervous involvement and precocious tertiary manifestations, were eradicated by more salvarsan, and now should be entirely avoided by treatment of sufficient intensity and amount to control the disorder. The treatment of syphilis with salvarsan and neosalvarsan has caused an intensive study over the entire world of the question of efficient management of the disease, to such a degree that great lessons have been learned and much good accomplished. Their ultimate value will require many more years to determine as to a choice between the two drugs salvarsan and neosalvarsan, the extensive use of both proclaims their efficiency, so that individual circumstances with the physician and patient must decide which, under the circumstances, is to be selected. The apparent preponderance of opinion that salvarsan is more efficient is offset to a degree by the difficulties of its administration and the more frequent reactions following its use. Concerning the dangers following the individual injections, many warnings have been given to exercise care after the fourth injection. The warning has not been accompanied by tabulated results, showing proof of this contention. On the other hand, the statistics now available show that the major portion of severe reactions, untoward results and fatalities have followed the first injection, and that with subsequent injections these results were greatly decreased.

The Transfusion of Blood.—McClure and Dunn (*Bull. Johns Hopkins Hosp.*, 1917, xxviii, 99) give a brief summary of the history, various methods, necessary precautions and dangers of blood transfusion. They have given 150 transfusions to 80 patients and a tabulated summary of the cases so treated is included in the article. The authors have used transfusions in the following conditions: pernicious anemia, illuminating-gas poisoning, exophthalmic goitre, hemophilia, toxemia, shock, hemorrhage, leukemia, septicemia, purpura hemorrhagica, malnutrition, endocarditis, intoxication, general debility, dysentery, typhoid fever, infectious diseases, melena neonatorum, scarlet fever, pellagra, tuberculosis and tumors. It has also been used for vaccinating purposes. The best results have been obtained in hemophiliacs and babies with melena neonatorum; in the latter it is a specific, and in the former it stops the bleeding immediately, although without curing the disease. It is of great benefit in all anemias and with proper regulation may be of still more benefit in the primary types. Thus far, in shock it has been disappointing. This may be due to the fact that the shock has progressed too far before the transfusion has been done. They would advise a very early transfusion in cases of shock. Following acute and prolonged hemorrhage transfusion is of the greatest benefit. For gas poisoning, bleeding is beneficial, as was pointed out by Halsted. Depletion followed by injections of saline solution is as good, if not better, than transfusion. In tuberculosis there has been only slight benefit and so far, nothing has been accomplished by transfusion in malignant diseases in man. They believe that there is a great field to be developed in the line of vaccinating transfusions. Their experiences in typhoid fever have been very satisfactory. It would be very desirable to have a series of donors who have recently had typhoid fever ready to give blood to very ill typhoid patients. In one patient, depleted by hemorrhages as well as having a high-grade toxemia, the transfusion of blood, from a person who had previously had typhoid fever, brought about the most marked improvement, the temperature dropping to normal and the hemorrhage ceasing, with a temporary disappearance of the toxemia. This is very suggestive of the good that might be accomplished by transfusing typhoid fever patients with blood from patients who have recently had the disease and who have probably a high grade of immunity. It would be interesting to try this type of transfusion in patients with other diseases and the procedure might prove very beneficial. A severe reaction occurred in 20 cases; a slight reaction in 25 cases; a chill in 15 cases; temperature elevation of over 101° F. in 34 cases; hemolysis in 8 cases. The results are summarized as life saving, 15 cases; beneficial, 63 cases; no benefit, 56 cases and harmful, 16 cases. Two deaths were probably due to transfusion, certainly one death was due to the improper matching of the blood.

The Passage of Neutralizing Substances from the Blood into the Cerebrospinal Fluid in Poliomyelitis.—FLEXNER and AMOSS (*Jour. Exper. Med.*, 1917, xxv, 499) report that the cerebrospinal fluid taken very early and quite late in the course of acute poliomyelitis exhibits no neutralizing action on filtered poliomyelitic virus. The blood serum on the sixth day of the disease already contains the neutralizing principles. The injection of sterile horse serum into the cerebrospinal meninges in monkeys increases their permeability, so that they permit the immunity neutralizing principles passively injected with the blood to pass into the cerebrospinal fluid. The passage in passively immunized monkeys takes place during a relatively brief space of time and apparently only while the inflammatory reaction produced by the horse serum is at its height. It is established for monkeys and rendered probable for man that the intraspinal injection of immune serum in poliomyelitis is curative. In monkeys normal serum exerts no such action, and at present nothing can be stated definitely regarding the therapeutic effect of normal serum in man except that probably any benefits which may arise from its employment would be attributable not to the action of the serum as such, but to the escape of circulating immunity principles in the blood made possible by the aseptic inflammation set up by it in the meninges. As the immunity principles appear in the blood only after several days, and the reported favorable effects of the immune serum treatment relate to the first days of illness, the employment of normal serum is thus not indicated, while that of an immune serum is.

Lumbar Puncture for the Relief of Delirium in Lobar Pneumonia.—MUSSER and HAFFORD (*Jour. Am. Med. Assn.*, 1917, lxviii, 1231) report seven cases of pneumonia associated with severe delirium, in which relief of the delirium promptly followed lumbar puncture. The mortality rate was high, but as delirium is usually an indication of a severe infection, the authors feel that lumbar puncture offers a ready aid in controlling one of the symptoms which may so aggravate the patient's condition that what little chance he may have of surviving the infection would be lost were it not for this procedure. Lumbar puncture is, therefore, suggested as a measure to control a severe symptom, and not for any direct curative purposes.